

PhD position on "Identification of Lax-integrable Systems" at Delft University of Technology, The Netherlands

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PhD: Delft University of Technology, The Netherlands

Topic: Identification of Lax-integrable Systems

Job description: Lax-integrable systems are (typically nonlinear) partial differential equations that can be expressed through a compatibility condition between two linear operators, the so-called Lax pair. This special structure provides them with many desirable properties. However, given an arbitrary partial differential equation, it is not trivial to decide whether it is Lax-integrable. Furthermore, it is even harder to find suitable Lax pairs. The process usually involves human intervention, a lot of expertise, and, finally, some luck.

The goal of this Ph.D. project is to investigate automatic methods for finding Lax pairs. While there are semi-automatic methods for finding Lax pairs from given partial differential equations based on symbolic computations, the focus in this Ph.D. project will be on numerical methods that identify Lax pairs from given input-output data. The successful candidate will join a team of Ph.D. students that are investigating the exploitation of Lax integrability in engineering applications.

Requirements: We are looking for a candidate with a strong academic background, who has or is close to obtaining a Master of Science degree in systems and control, applied mathematics, physics, electrical engineering, or another related discipline. Experience with classic system identification, nonlinear systems, or numerical methods is a plus.

Conditions of employment: TU Delft offers a customisable compensation package, a discount for health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. An International Children's Centre offers childcare and an international primary school. Dual Career Services offers support to accompanying partners. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

As a PhD candidate you will be enrolled in the TU Delft Graduate School. TU Delft Graduate School provides an inspiring research environment; an excellent team of supervisors, academic staff and a mentor; and a Doctoral Education Programme aimed at developing your transferable, discipline-related and research skills. Please visit www.tudelft.nl/phd for more information.

Information and application: For information about this vacancy, you can contact Dr.-Ing. Sander Wahls, Assistant Professor, email: s.wahls@tudelft.nl. For information about the

selection procedure, please contact Irina Bruckner, HR advisor, email: application-3mE@tudelft.nl.

To apply please submit the following:

- curriculum vitae;
- statement of motivation and research interests (one page);
- transcripts of all exams taken and obtained degrees (in English);
- names and contact information of up to three references (e.g. project/thesis supervisors);
- up to two research-oriented documents (e.g. thesis, conference/journal publication).

Please email your application to Irina Bruckner, email: application-3mE@tudelft.nl. When applying for this position, please refer to vacancy number 3mE18-34. The start date is flexible. Applications will be considered on a rolling basis until the position is filled.